CASE STUDY

"RESTORATION OF FOREST: GUIDED SUCCESSION" (CZECH REPUBLIC)

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1 Introduction: What is the case study about?

The case study is situated in the region of Liberec, the small region in the border with Germany/Saxony, with high proportion of protected areas (1 national park and 5 landscape protected areas) and good transport links with Prague and neighbour towns. The case study area is close to the capital Liberec of Liberec region, on the west slopes of Ještěd massive, a dominant of the region. The area is a part of NATURA 2000 (CZ0514668 - Vápenice – Basa), the protected species is a bat *Myotis bechsteinii* ([www.nature.cz/natura2000-design3/hp.php](http://www.nature.cz/natura2000-design3/hp.php)).

Forest in the Czech Republic covers 34 % of the total area, in the region of Liberec 44.2 %. Natural species structure of the forest has been historically changed into mostly coniferous (2014: 72.5 % in CR, 80.1 % in Liberec region) with a predominance of spruce (50.7 % in the CR, 53.5 % in the Liberec region) and small share of fir (1,1 % in the CR, 0,2 % in the Liberec region). From deciduous species the most important is beech, which shares 8 % in the CR and 7.4 % in the Liberec region. Natural structure of the forest should consist of 11.2 % spruce, 19.8 % fir (34.7 % total coniferous species) and 40.2 % beech (Ministry of Agriculture CR 2015, Region of Liberec 2014). There is still very high defoliation due to past pollution and subsequent low stability of forests in the Czech Republic. Recently, climatic excesses and infestation of bark beetles have also a negative influence, all together threatens especially the stands formed by equal-aged spruces (Ministry of Agriculture CR 2015). The Forest Law mandates a minimum share of 30% of deciduous trees when planting a new forest and many foresters prefer to further increase this share.

The aim of the project of “Nový prales” (“New primary forest”) was to enrich the monotonous spruce commercial forest, damaged by former emissions of sulphur oxides, into multi-species healthier stands with higher share of local fir and beech and other deciduous trees and shrubs. A group of enthusiastic/non-governmental ecologists started to cultivate seedlings from the local adult elms, maples and other autochthonous species in a half of 90ties. They were successful, but encountered a lack of interest for the seedlings from state foresters. Therefore, they looked for other forest land, and began with the conversion of forest on private and municipal land outside the Landscape Protected Area Jizera Mountains. It is not possible to buy or purchase any state forest land. Some private owners offered them the land for sale and so the group decided to found a land trust and start fund rising from the public (Source: the forest expert, the NGO forester, [www.cmelak.cz](http://www.cmelak.cz)).

The transformation process/action situation consists on gradual conversion of former commercial spruce forest into species-rich and space- and age-diversified forest. Reasons, aims and “mechanism” of the change is explained to public by many educational activities.

The main benefit is biodiversity conservation, restoration, and higher ecological stability of the forest ecosystem, including erosion prevention (due to higher share of so called deciduous trees with deeper roots and unregular design of seedlings planting). The secondary ESBO is education for public, children, private forest owners and foresters. Another secondary benefit is a long-term contribution of the NGO Čmelák to civic society development, which became a significant part of the local society and decision making process in environmental issues.

The key actor is a non-governmental organisation “Čmelák – společnost přátel přírody” (“Bumble-bee – organisation of friends of nature”, successor organization of “Ancient guardians of the Jizera Mountains”). The organisation was found in 1996, the land-trust was found in 2002,
as a member of the Czech land-trust organisation. The organisation is now the owner of some 60 ha in total (forests, wetlands, a pond, some grasslands), in 20 localities in the region. The NGO Čmelák carry out management of the localities with the main goal of increasing biodiversity; in the forest it means seedlings planting, protection of seedlings, building and maintenance of fences, and tables with information, organisation of voluntary and company meetings, educational activities, searching for donors, doing marketing activities, etc. Recently there are two out of former five founders active and one forester, and some four to five other employees (source: the NGO forester, www.cmelak.cz).

Other actors/partners: the forest expert (his function stems from the Forest law), who cares about fulfilling the activities described by the Forest law, e.g. the forest plan and protection against the bark beetle, and works as the main forest advisor. He is a private person personally fond on natural-friendly forestry (source: the forest expert).

There are several authorities, especially the administration of the city of Liberec and the administration of the region of Liberec, responsible for nature protection, forestry and hunting activities – they helped with various administrative processes and also helped to partly solve the conflict between “Nový prales” and hunters (source: the NGO forester). The organisation Čmelák obtained also some financial support from funds of the region and the city of Liberec for its activities.

Individual donors, volunteers and sponsor companies doing its “teambuilding” activities: these persons and organisations donated money to the project (a public collection is done for land buying) and help with manual work (e.g. fencing repair, cutting grass around seedlings etc.). These forms of support are used for activities which cannot be paid from public funds (source: the NGO forester).

Local hunters exercise the right of hunting ground to land of Čmelák.

Main part of the transformative mechanism is a purchase of land, cultivation and planting seedlings of various autochthonous species of trees and shrubs, fencing, letting old trees to die, fundraising for the restoration activities, organization of working and educational activities. The forest management in the locality corresponds exactly to the recommended management for the Site of Community Importance Vápenice - Vasa. Both private and public money are used to support forest restoration and public education. Governance arrangement of the project: the trust Čmelák has a council and a leader; these bodies carry out strategic decisions. Operational decision (forest management) is fully in the hands of the NGO forester. State authorities intervene in the case of administrative proceedings. Donors and sponsoring companies decide in which activity they put their money or voluntary work.

Range of actors is quite limited; they strongly trust each other, especially at the goals of the project. Opposite feeling is to hunters, who play generally two different roles in CR: 1. Small local organisations support wildlife, feed the animals and birds in winter, pay for field damages caused by the game animals to farmers, carry out social activities (meetings, dancing etc.); their goals are not far from the aims of conservationists and foresters, but they are usually too few and old to be able to effectively control number of deer and wild pigs in forests. 2. Commercial hunting organisation, which rent for a lot of money big hunting ground, especially in the border or in protected areas of the State. These hunters have usually no relationship to the local people and do not feel responsibility for an effective control of amount of deer.
Information sources and interviewees were questioned based on theoretical background stemming mainly from theories of institutional economics Ostrom (1990), Ostrom (2005), McGinniss and Ostrom (2014), theories of collective action (OECD 2013).

2 Definition of the social-ecological system (SES) studied

2.1 Figure of the SES, using the SES Framework

Outline of the main structure of the SES to be sketched out for each CS (adapted from Ostrom and Cox 2010; McGinniss and Ostrom 2014)

The SES system and its subsystems are described in the chapter 1.

2.2 Short characterisation of key drivers/motivations

The key driver in the project “Nový prales” is first of all enthusiasm of few ecologists, who managed to meet demand of public for improvement of nature in forestry. Another driving forces/motivations are public policy tools focused on environment, forest restoration, environmental education and support of nongovernmental organisations, private financial support, educational and social benefits (public excursions, team building activities, volunteers...
meetings), increasing interest in the topics of environmental protection and natural processes and the active involvement of a part of public, especially more educated (Institute of Sociology of Academy of Sciences 2016). Some marketing activities were used to motivate donors and volunteers, e.g. successful Christmas campaign to purchase a piece of forest. No market driver was identified but can be considered in future: timber from cut adult spruce trees can be sold partly to get money for fence reconstruction. The aim is to partly reduce dependence on public funds. The issue is how to explain the change on an approach (start selling wood) to donors (source: the NGO forest expert).

### 2.3 Description of other important variables chosen

<table>
<thead>
<tr>
<th>Actor (A)</th>
<th>NGO Čmelák, the forest expert, individual donors, volunteers, sponsoring companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology used</td>
<td>cutting, planting new trees, fencing</td>
</tr>
<tr>
<td>RS</td>
<td>Forest</td>
</tr>
<tr>
<td>Sector (RS1)</td>
<td>Forestry</td>
</tr>
<tr>
<td>Clarity of system boundaries (RS2)</td>
<td>Area naturally covered by mixed temperate forest (low)</td>
</tr>
<tr>
<td>Size of resource system (RS3)</td>
<td>Forest area</td>
</tr>
<tr>
<td>Human constructed facilities (RS4)</td>
<td>Fences, nursery</td>
</tr>
<tr>
<td>Productivity of system (RS5)</td>
<td>Wood in m³/time</td>
</tr>
<tr>
<td>Equilibrium properties (RS6)</td>
<td>Seedlings, both planted and from natural regeneration can survive only when protected against the deer</td>
</tr>
<tr>
<td>Predictability of system dynamics (RS7)</td>
<td>Medium</td>
</tr>
<tr>
<td>Storage characteristics (RS8)</td>
<td>Trees stay alive for more than 80 years (in commercial forest), the assumption is surviving in the “jungle” is 300 years</td>
</tr>
<tr>
<td>Location (RS9)</td>
<td>Ještěd ridge in the region of Liberec</td>
</tr>
<tr>
<td>RU</td>
<td>Number of ha of forest left to (almost) natural succession; species number in ha of forest</td>
</tr>
<tr>
<td>Mobility (RU1)</td>
<td>No</td>
</tr>
<tr>
<td>Growth or replacement rate (RU2)</td>
<td>Growth of forest trees</td>
</tr>
<tr>
<td>Interaction among resources units (RU3)</td>
<td>Yes, synergy</td>
</tr>
<tr>
<td>Economic value (RU4)</td>
<td>Value of wood used for fencing, selling wood of previous forest considered</td>
</tr>
<tr>
<td>Number of units (RU5)</td>
<td>Area of near-natural forest (ha), number of species / ha of forest</td>
</tr>
</tbody>
</table>

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 633814
### Distinctive characteristics (RU6)

<table>
<thead>
<tr>
<th>Natural markings: It is marked through the unique geographic location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial markings: Donors obtain a certificate they are owners of a “piece of New jungle”</td>
</tr>
</tbody>
</table>

### Spatial and temporal distribution (RU7)

<table>
<thead>
<tr>
<th>Natural: Spatial and temporal variability of the forest characterised by forest typology units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial: Spatial and temporal variability done by fencing and planting seedlings</td>
</tr>
</tbody>
</table>

#### 2.4 Discussion of the SES

NGO based its work on assumption there is demand for greater biodiversity in forestry and created a “product” (a piece of forest land for biodiversity) to “sell” to general public. The public can support the project financially (especially by buying the land) or in kind (by voluntary manual work). The NGO is able to use also public funds from government policy tools for some activities, like nursery, fencing and educational activities. As a result in combination of support of individual donors and companies, NGO was able to buy some forest land, cut gradually a part of adult spruce trees to make a place and light for seedlings, plant seedlings of autochthonous trees and shrubs and protect them from deer by fencing. Outcome is the forest changing towards more natural ecosystem.

The main benefit of the project (beside the increase of biodiversity) is that visitors, i.e. public, foresters and forest owners can see and personally help with forest restoration of common type of the former commercial and damaged forest and can apply similar mechanisms in other forests. The private donors and volunteers appreciate also possibility to contribute to restoring specific locations; they trust the NGO highly (an actual natural succession will start in future dozens of years), (source: donors, NGO).

The main ESBO, increasing biodiversity, is not documented unfortunately by any special monitoring; the lack is known to the NGO and it is definitely a challenge in consideration. There is evidence of numbers of planted seedlings and number of tree species in documentation of the public grants (Annual reports of the NGO). The state forest structure monitoring is done, but in too long intervals. Differences between forest structure inside the fence and outside can be seen (e.g. during the public excursions, qualitative evaluation). The key stakeholders know each other, but not in case of donors. Because rather low number of key stakeholders (the main partners are NGO and donors, others support the work), the need for self-regulating mechanism of well communicated possible failures of partners in observing rules is not so important, and this role is substituted by NGO annual reports and audits (bank account for donors under supervision of Regional government). Participation on the action situation is based on a good feeling associated with creation of some common good – nature improvement, it means there is a high level of sharing values between NGOs, regional administration, and donors, but this is not case with hunters and traditional foresters. Because the NGO owns the forest land the only limitation for decision making is observation of laws, which means they have high level of autonomy in decision making. The other partners are announced about
all key decisions but not subject of direct discussions (mainly between NGO and forest expert). The national level of policy influences the NGO work only in form of not perfect formal rules (e.g. laws). NGO is not in a position now to influence the policies by lobbying. The decrease public support does not harm the sustainability of current project. The recent technological change does not influence the ESBO provision significantly.

2.5 Common aims, conflicting interests and goals

Common aim of all the actors is increasing species biodiversity, ecological stability and landscape attractiveness. Conflicting interests are between NGO Čmelák and most of foresters who consider the numbers of deer too high and not regulated enough and blame the hunters, who fail to reduce numbers of deer, and hunters, who like deer and do not perceive overpopulation of deer as a major problem.

There was a heavy conflict between the NGO and local hunters about the fencing of a part of “Nový prales” land some 6-7 years ago. Species rich forest has to be fenced off due to protection of seedlings and vegetation, and therefore the site is closed for wildlife and partly for people. Some NGO’s administrative mistakes in combination with possible personal animosity between the local hunters and NGO leaders led to the conflict. The hunters explained that the shape, length (about one kilometer), and location of the first large fence is extremely not favorable for animals and cut their preferable migration path. The fenced area covered natural place of gathering of game animals and they had to migrate elsewhere. The next fenced areas were smaller (source: NGO representative, expert forester). In addition they complained also that one spring was fenced of which is regarded as not sensitive for wildlife. They believe the broad leave trees can survive there even without fences (interviewee referred to trials of the state foresters in past in the area). The fence was ordered to be demolished. Because the conflict pointed to an inconsistency of forestry practice and legislation, there was necessary to find a solution: three ministries (M. of Agriculture, M. of Environment and M. of Local Development) agreed on a methodological document and a change of The Building Act in the point of forest fencing. It can be classified as an institutional change. The relationship of hunters with the NGO is now detached (Source: the NGO forester, the forest expert, the administration of the region of Liberec).

The hunter (at the same time the owner of forest in area) suggested that there should be at least some mature trees replaced in order to give a space for new seedlings, but it was not done in the Cmelak forest and the new trees are growing slowly (source: local hunter involved in the conflict). NGO adopted this practice in their forests later (source: NGO representative).

There is a free access to forests for general public (traditional hobby activity, enabled in the Forest Act, with exclusion of fenced forest areas) and this could a source of conflict. The reason is the forest owner is responsible for the safety and health of forest visitors (given the superior law Civil Code), especially in a case when old trees at risk of falling down.

2.6 Other issues arising from SES analysis and context/case study specific aspects/issues

The main factor of success was effort of NGO in convincing donors and other supporters. The NGO designed the support possibilities in a way it was attractive both to individuals and also companies (source: the NGO leader). The key point was building the trust of donors that their financial support would be invested to increasing biodiversity in a transparent way. It confirms
that the participants on the firms’ team-building events turned to individual donors and private participants of excursions in the “Nový prales” later (the NGO forester).

3 Status of the SES and potentials

3.1 Description of the SES

In general commercial forestry management was ceased in the project and not suitable trees (spruce) were left dying (potential temporal sale is considered). This activity means that the resource unit does not produce timber but only biodiversity. This motivated some stakeholders to support the project (general public, some companies, and state administration in mezzo level) but created tensions with others (e.g. hunting association see measures to protect seedlings as violation of rules for hunting). Governance and state policy are quite favorable to such activities despite there is no direct policy tool for such activity outside protected areas, but it was possible to utilize existing schemes.

NGO had to contact other stakeholders and convince them that when there is kind of collective action the result will be of public benefit and also that they can enjoy the feeling of contributing to creation of something special and exceptional in the Czech Republic (kind of “primary” forest). Also quite significant coordination skills were necessary to both manage fund rising/dealing with donors and volunteers and utilizing public funds. Each type of fund is suitable for different part of the ESBO provision process.

3.2 Relationships between farming and forestry, and the quantity and quality of ESBOs

Ecosystem services produced by alluvial deciduous forest ecosystem saturated with water are biodiversity, oxygen production, improving local climate (air-conditioning) services, support of short water cycles and water retention service (Seják 2010). The value produced in the project is exceptional because such forests are in the Czech Republic quite rare (especially outside protected areas), because of the species composition, non-commercial management and long-term vision.

3.3 Key motivational, institutional and socio-economic factors

Motivation of all key actors is a good feeling/satisfaction from the successful project and meaningful work for environment/nature conservation and effort to show other owners that forest restoration can be carried out. Institutional factors: the NGO is an active land owner who uses various public and private financial resources. The work is based on property rights, which are limited only by forest law (mostly supporting the effort, e.g. creation of forest plan) (Forest Act no. 289/1995 Coll.) and partly also law on hunting (Act no. 449/2001 Coll., On hunting.). The NGO is a serious partner for local and regional authorities. NGO observes the rules of transparency in the use of funds. Socio-economic factors: the NGO Čmelák is a local organization with local employees, the organization is small and dependent on recent projects – it means that the number of employees is variable and it represents a certain risk for the sustainability of the project. The situation is complicated also due to involvement of NGO leader in regional politics (his main political theme is controversial: the fight against corruption).
The project “Nový prales” is carried out in the attractive landscape for tourists. The feeling of sharing values promoting biodiversity and restoration activities helped “sell” the idea/support of biodiversity to donors and volunteers. Many funds have been used for the project, both European or trans-boundary programs and national support.

The greatest recent task is how to manage economical sustainability of the project activities, which is dependent also on finding an optimal compromise between “pure” ecological and non-profitable character of the organization and a need of ensuring the long-term viability of the organization. One of the reasons is, that the full results of the project come long term and there is a need to assist to the process by long term management. On the other hand donors are usually more attracted to new projects, than to assist in long term gradual change of forest.

### 3.4 Levels of provision, trends and determinants

The NGO does not make regular monitoring of the seedling survival or measurement of ground cover by different levels of vegetation and the number of species, but they are preparing monitoring of abundance and species diversity of bats. The forester feels that some monitoring is missing but there are no available capacities for it at present.

The NGO forester visits the area very often (weekly during the season) and checks the state of vegetation, bark beetle damages and fencing visually, forest expert does the same activities in less frequent intervals (at least yearly in the last years, more often in the beginning of the project). Other members and employees of the NGO Čmelák and public can visit the area during the excursions or individually, the area is open for access.

The project “Nový prales” covers small area in several isolated places which are close to each other. The project area is surrounded by commercial and recreational forest. In the region there are other near-natural forests, e.g. in the Giant Mountains or in Jizera Mountains. Both the places are state protected areas with some parts of forests let to natural succession due to the Act of protection of nature and landscape. The project “Nový prales” is realized in the private land and in “common forest” so the demonstrated fulfilling of the idea can be more easily understood and followed by other owners. The NGO Čmelák focuses now on sustainability of the project “Nový prales”, and considers some extension in other forests in the region (source: the NGO leader). Transferability of the project as a whole is limited, due to the high financial investment and enthusiasm, but the experience is valuable (source: consensus of the focus group).

Public demand for biodiversity is generally high, but people are not willing to compromise on their traditional rights (like free access to the forest or collecting of mushrooms and berries) or their standard of living (willingness to pay for biodiversity is low). They like the forest “clean” and synoptic and they are used to spruce monocultures from their childhood. The foresters increase their demand for more natural forest management and search for natural friendly and economically sustainable ways of forest management: e.g. FSC Czech Republic - standard/certification of forest management and wood products made according to principles of sustainable development and evaluated by consumers (www.czechfsc.cz), Pro Silva Bohemica – a branch of Forestry company open to natural-friendly forest management (www.prosilvabohemica.cz), state paid non-intervention area in national parks and natural reserves (www.mzp.cz), etc.
The key determinant of improvements in ESBO provision in the project but also generally in the Czech mountain forests is amount of deer in our mountain forest. Key limiting factor is according to interviewees’ opinion the Hunting Act and its implementation of and consistency with the Forest law. Another issue is lack of consistency between Forest law and Civil Code on the matter of responsibility of the forest owner for the life and health of forest visitors (source: the NGO forester, expert forester).

There is also another type of limitation: budget rules for NGO put limits of using funds for some types of costs, which leads to financial difficulties. The NGO needs financial support for activities, but also for the operation of the organization itself, but public like to see all the public money put to nature conservation. As a matter of transparency: The purpose of the money from private donors is clear (buying forest land and maintenance of the existing “Nový prales”) and it was checked by the region of Liberec. The purchase of land was not motivated by speculation about the land price increasing in future, because the “Nový prales” is located on slopes with unfavorable conditions for commercial forestry. It was one of the reasons, why owners of the land were willing to sell the forests to NGO (source: the expert forester).

3.5 Relevant governance arrangements and institutional frameworks

At the national level the key authority for forestry is Ministry of Agriculture CR, in protected areas the leading authority is Ministry of Environment CR. There are also large forests under the Ministry of Defense CR. The state forests are managed mostly by state company “Lesy České Republiky” (Forests of the Czech Republic) and Nature Conservation Agency of the Czech Republic and National parks. There are also municipal and private forests and a certain forest area will be restituted to the Church. The policies are delivered by the ministries at the national level and by regional authorities at the regional level. Areas protected under NATURA 2000 outside the state protected areas are managed by regional authority.

Forestry law is very mature and gives a good base for near-natural forestry. It determines the rules of management on the basis of mandatory forest management plans and provides targeted advice provided by a professional forest expert to each owner. State Institute of Forest Management provides regular monitoring of the condition of the forest and wood harvest (www.uhul.cz, National Forest Inventory: http://nil.uhul.cz) and Research Institute of Forestry and Wildlife provides monitoring of health of forests and forests soil conditions (2 data sets on permanent plots on national level). Data are available for free (www.vulhm.cz/rozcestnik_monitoring).

The property rights are clear for the NGO who is the owner of the forest land, but the property rights are limited to some extent by forest law (foresters should follow rules for forest plan design and implementation) and also by rights of hunting society (source: Forest Law, the NGO forester). Different views are between old-fashioned foresters and ecologically oriented foresters and conservationists on the main purpose of forest management and they differ in evaluation of ecosystem services from forests and ecological balance in forest.
4 Conclusions derived from analysis in Steps 1 and 2

4.1 Key findings on the particular SES and its potentials

The main driver was enthusiasm of NGO, which saw the potential to meet “demand for natural forests in public” and at the same time there was a possibility to use available private and municipal land for “the natural experiment”. Later similar forest restoration has been started in more places and by various actors, including the state Forest of Czech Republic, usually in protected areas (the leader of NGO and the NGO forester). Actually in order to meet such demand it was necessary to fully stop commercial forestry, it means the provision of such type of forest was regarded as mutually exclusive to commercial forestry. In the project “Nový prales” certificates are given to donors, but it has no market value.

The demand for near-natural forest is increasing, both in public and among experts (foresters and conservationists). Appreciation of near-natural forests by public depends partly of limitations. Here the limits of direct use of the ESBO are the fences with gates (NGO forester, excursion participants).

The need for awareness is especially on the national/policy design level. The forest experts know the issue; there is a need for public and municipal education and discussion with experts. In general there is an urgent need for reconciliation and fulfillment of Forest law and Hunting Act (amendments are under review) and an effective control of abundance and damages done by deer (source: the forest expert). The policy tools focused on ESBOs provision should allow financing basic operational needs of nonprofit organizations (source: the leader of NGO).

4.2 Governance arrangements and institutional frameworks

Following governance arrangements were supportive to the project: possibility to purchase and buy a land and form a land trust, to create the public collection (checked by the region of Liberec), to use various funds and programmes for activities of nonprofit organizations, to use advisory service from the forest expert. The conflict between the NGO Čmelák and the local hunters due to the fencing (7 years ago) lead finally to an agreement of three ministries, M. of Agriculture, M. of Environment and M. of Local Development. The institutions agreed on methodological guidelines for forest fencing, but the problem is still alive, because the guidelines are not binding for the local Building administration. At present the Building law is on forest fences less strict (source: the administration of Liberec region). But the conflict of two different paradigms of the forest management was not overcame and there is no communication of the interest groups on the issue was not successful.

There are some strengths and weaknesses: in local level there is a possibility to discuss and explain personally (strength), but there are many personal/family/neighbour bad relationships and historical injustices (weakness). In national level the decision makers often do not know an issue from practical point of view and solution can be formally good, but not suitable for local people. The regional level is somewhere in the middle.

There has not been significant influence of CAP reform in 2014. For the project is important the new Operation Programme of Environment (2014-2020) as a potential source of funding. Another available potential source of funds are national environmental programs and also regional and municipal funds for forestry activities (source: the representative of the Liberec region). As a source of financial support of the project of “Nový prales” it is also important the
4.3 Other enabling or limiting factors

It was revealed, that donors are more interested in new projects and less willing to support long term continuing projects, which represent challenge for coverage of some operational costs in future (the NGO forester). No other limiting factors were identified. One marketing “seasonal” experience: “pieces” of the future near-natural forest “Nový prales” is sold successfully before Christmas (the NGO leader).

4.4 Reflections on the case study methodology used and potential improvements

It was necessary to study previous Ostrom literature to understand some concepts and assumptions used in SES. There were several sensitive issues like getting contacts to donors from the NGO, this obstacle was not so easy to overcome. But in general respondents were open and willing to provide sufficient information. The only respondent rejected any interview – civil servant from the City Liberec office. The reason was that the authority is not authorized to provide such information. There was some inconsistency with the amount of information required to answer the questions in excel sheet (reflecting full institutional analysis according to Ostrom) and outline of this report, which is brief and not requiring several arguments coming from the analysis based on all levels of variable collected according to the Excel list of variables.

5 Research and action mandate for Steps 3 and 4

5.1 Agreed objectives of activities to be undertaken with initiative/stakeholders

The key question form the project actors was about support to get involved stakeholders (policy makers) in national level to some problems related with “Nový prales”, like protection of seedlings and sustainability of such activities. The NGO members were keen to elaborate on the sustainability of the project.

5.2 Innovations, impact, transferability, potential risks and research bias

Partners were open to continuation of the case study.

6 References

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www.nature.cz/natura2000-design3/hp.php
www.prosilvabohemica.cz
www.uhul.cz
http://www.vulhm.cz/rozcestnik_monitoring

In-depth interviews with key actors (2016):
- NGO Čmelák: the NGO Leader, the forester
- The forest expert
- Two representatives of individual donors and of sponsoring companies
- A representative of the Liberec region
- A representative of local hunters

The interviews were based on a questionnaire to reveal roles, motivations, relationships and levels of trust and influence, conflicts and differing opinions, valuation of PG/ESS etc.

The focus group (14.7.2016 in Liberec)
The main issues and results:
Focus group confirmed most of the conclusions from the individual interviews, some of them appreciated (it was incorporated in the text). Existing differences in opinion of professional foresters and environmentalists regarding optimal way of forest restoration were discussed. Some suggestions for improvement were identified: strengthening trust by transparency and open discussion with foresters, effort of less dependence on subsidies by sale of some wood, ask for a change to the status of forest special purpose forests, effort to discuss and find solution for better sustainability of the organization activities of NGO and better cost-effectiveness of the project activities, improve information on web, especially about the aims of the project,
to start monitoring, to disseminate experience from the project to forestry actions (conferences, workshops).
7 ANNEX

7.1 Documentation of research and action progress

List of stakeholder involved and events with summarised outcomes

- NGO Čmelák: the NGO Leader, the forester
- The forest expert
- A representative of individual donors, of sponsoring companies
- A representative of the Liberec region
- A private donor
- A representative of sponsoring company

Map of the case study

Map 1: Location - core area of the forest “Nový prales”. Čmelák, společnost přátel přírody
Map 2: Location of the “Nový prales” in common map of the region of Liberec (red circle)
Photos from the excursion for public in the locality 11.6.2016 (K. Čámská)

**Photo 1:** Starting information about purpose and history of the project “Nový prales” for participants of the excursion

**Photo 2:** Demonstration of planting tree seedlings, followed by seedlings planting by participants of the excursion

**Photo 3:** New lower floor of the forest, consisting of seedlings and natural regeneration
Photo 4: Nesting box for bats
Photo 5: Gateway to overcome a fence around the oldest part of the “Nový prales”

Photo 6: Forest lawn and hunting hide in the land of “Nový prales”
Photo 7: Wound on the trunk of spruce after peeling bark deer
Photo 8: Final picnic grilling sausages and cheese with the discussions in the public excursion

Photo 9: Focus group in Liberec, 14.7.2016

7.2 Supporting data and statistics

None.